C&O 430/630 — Algebraic Enumeration

MWF 11:30-12:20, MC 2054

Instructor: Prof. Kevin Purbhoo
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Course webpage: `http://www.math.uwaterloo.ca/~kpurbhoo/co630/`
Office hours: Tues. & Wed. 10:00–11:00 (tentatively)

Topics: The algebra of Laurent series and Lagrange's Implicit Function Theorem, enumerative theory of planar embeddings (maps). The ring of symmetric functions: Schur functions, orthogonal bases, inner product, Young tableaux and plane partitions. Non-intersecting paths, sieve methods, partially ordered sets and Mobius inversion, strings with forbidden substrings, the Cartier-Foata commutation monoid. Introduction to the group algebra of the symmetric group, enumerative applications of sl(2).

Prerequisite: C&O 330 or permission of instructor; cumulative overall average of at least 80%.

Text: There is no formal textbook for this course. Notes will be made available on the course webpage; some additional references are listed also there.

Marking scheme: Final marks will be calculated as the maximum of the following two schemes:

25% homework + 20% midterm + 55% final exam
25% homework + 10% midterm + 65% final exam

Where appropriate, adjustments may be made to raw marks, before this formula is applied; no additional adjustments will be made to the final marks.

Homework: Homework assignments will be due every 2–3 weeks. Students are expected to turn in all assignments. C&O 630 students will be held to a higher standard than C&O 430 students, in terms of the number and difficulty of assignment problems completed. Extensions may be granted under reasonable circumstances, but must normally be requested at least two days before the assignment is due. Where no extension has been granted, late homework will receive a maximum of 80% credit.

Midterm: A midterm test will be held in class (date to be announced). Any student who misses the midterm without a legitimate reason (i.e. medical, or with the instructor's prior permission) will be assigned a mark of zero for the exam.

Policy on missed final exam: In the case of illness during the final exam, a make-up exam or incomplete grade will only be granted to students who have completed the required term work to satisfactory standards.

Avoiding academic offenses: Students are expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Students who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work / collaboration should seek guidance from the course professor, TA, academic advisor, or the Undergraduate Associate Dean. For information on categories of offenses and types of penalties, students should refer to

Policy #71, Student Academic Discipline,

`http://www.adm.uwaterloo.ca/infosec/Policies/policy71.html`

Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance,

`http://www.adm.uwaterloo.ca/infosec/Policies/policy70.html`

Note for students with disabilities: The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.